

CLAIMS

1. A method of producing a molded article of a fiber-reinforced composite material by simultaneously molding a plurality of sheets of prepreg cut out in a predetermined shape, the method characterized by including the steps of:

(1) forming a plurality of notches or cutouts in respective prepregs so as to form at least one set of a partially separated flap and a residual portion for each prepreg;

(2) arranging the respective prepregs at predetermined portions of a press die using partially separated flaps of the prepregs as positioning pieces;

(3) forming a desired three-dimensional shape by pressing the partially separated flaps of the respective prepregs; and

(4) forming a desired three-dimensional shape as a whole by overlapping end edge parts of residual portions on the partially separated flaps and pressing them.

2. A method of producing a molded article of a fiber-reinforced composite material according to claim 1, wherein, in the step (1), portions or all of the plurality of prepregs are laminated to obtain a laminate, and the laminate is notched or cut out to form at least one set of the partially separated flap and the residual portion for each prepreg.

3. A method of producing a molded article of a fiber-reinforced composite material according to claim 1, wherein, in the step (1), each prepreg is notched or cut out

to form at least one set of the partially separated flap and the residual portion for the prepreg.

4. A method of producing a molded article of a fiber-reinforced composite material according to one of claims 1 to 3, wherein shapes of the partially separated flaps formed in the respective prepregs are similar to or coincident with one another, and positions of the notches or cutouts are shifted for the respective prepregs.

5. A method of producing a molded article of a fiber-reinforced composite material according to one of claims 1 to 3, wherein the shapes of the partially separated flaps formed in the respective prepregs are similar to or coincident with one another, and the notches or cutouts are formed in such a manner that a width of the partially separated flap to be arranged in the concave face side of the molded article by pressing is not narrower than a width of the partially separated flap to be arranged in the convex face side with respect to all the partially separated flaps to be laid over at a same position.

6. A method of producing a molded article of a fiber-reinforced composite material according to one of claims 1 to 3, wherein, in the plurality of prepregs to be laminated, the notches or cutouts of the respective prepregs to be laminated are formed in such a manner that cut edges in a center side are spaced at distance of 2 mm or longer from one another.

7. A method of producing a molded article of a

fiber-reinforced composite material according to one of claims 1 to 3, wherein a width of the partially separated flaps formed by the notches or cutouts is made to be parallel or narrowed toward the outer circumference.

8. A method of producing a molded article of a fiber-reinforced composite material according to one of claims 1 to 7, wherein a reinforcing fiber to be employed for the prepreg is at least one kind of fibers selected from carbon fiber, glass fiber, and organic fiber.

9. A method of producing a molded article of a fiber-reinforced composite material according to one of claims 1 to 8, wherein the reinforcing fiber to be employed for the prepreg is a unidirectional material of the reinforcing fiber arranged evenly in one direction or a material having a fabric structure.

10. A method of producing a molded article of a fiber-reinforced composite material according to one of claims 1 to 9, wherein a matrix resin to be employed for the prepreg is a thermosetting resin.

11. A method of producing a molded article of a fiber-reinforced composite material according to claim 10, wherein the thermosetting resin is an epoxy resin composition.

12. A method of producing a molded article of a fiber-reinforced composite material according to claim 11, wherein the epoxy resin composition comprises the following

component A, component B, component C, and component D:

component A: an epoxy resin;

component B: an amine compound (component B-1) having at least one sulfur atom in a molecule and/or a reaction product (component B-2) of an amine compound having at least one sulfur atom in a molecule with an epoxy resin;

component C: an urea compound; and

component D: a dicyanodiamide.

13. A method of producing a molded article of a fiber-reinforced composite material according to claim 12, wherein the contents of the sulfur atom and the component C in the epoxy resin composition are 0.2 to 7% by mass and 1 to 15% by mass, respectively.

14. A method of producing a molded article of a fiber-reinforced composite material according to claim 12 or 13, wherein the component C is a granular material with an average particle diameter of 150 μm or smaller.

15. A preliminarily molded article of a fiber-reinforced composite material obtained by the method of producing a molded article of a fiber-reinforced composite material according to one of claims 10 to 14, wherein a thermosetting resin is un-cured.

16. A molded article of a fiber-reinforced composite material obtained by the method of producing a molded article of a fiber-reinforced composite material according to one of claims 10 to 14, wherein a thermosetting resin is cured.

17. A method of producing a molded article of a fiber-reinforced composite material, the method including the step (5) of:

further heating and pressurizing the preliminarily molded article of a fiber-reinforced composite material according to claim 16 for curing and molding.

18. A method of producing a molded article of a fiber-reinforced composite material according to claim 17, wherein the step (5) is carried out by compression molding.

19. A method of producing a molded article of a fiber-reinforced composite material according to claim 18, wherein the compression molding is carried out at molding pressure of 20 kgf/cm² or higher and molding time in 15 minutes.

20. A method of producing a molded article of a fiber-reinforced composite material according to claim 16 or 19, wherein the molding temperature at the time of the compression molding is 120°C or higher.

21. A molded article of a fiber-reinforced composite material obtained by uniting and curing a plurality of laminated prepregs by the method of producing a molded article of a fiber-reinforced composite material according to one of claims 17 to 20.